

the spatially addressable working electrodes forming the array of materials, wherein at least two members of the array of materials have different compositions;

a detector for measuring the electrical property of the members of the array of materials, with the spatially addressable working electrodes electrically connected to the detector; and

reference electrodes having ends located adjacent ends of the spatially addressable electrodes;

wherein the spatially addressable working electrodes, the at least one other electrode and the reference electrodes are adapted to apply the independently variable electrical potential between each of the spatially addressable working electrodes and the at least one other electrode.

244. The apparatus of claim 43, wherein the spatially addressable working electrodes are embedded within the substrate.

345. The apparatus of claim 43, wherein ends of the spatially addressable working electrodes are disposed on a surface of the substrate.

446. The apparatus of claim 43, wherein the substrate is a resistive material that provides a substantially continuous electrical potential that varies between adjacent spatially addressable working electrodes.

72 450. The apparatus of claim 43, wherein the ions undergo redox reaction at the spatially addressable working electrodes forming the array of materials.

73 470. An apparatus for making and screening an array of materials by electrochemical deposition, the array of materials having a plurality of members, the apparatus comprising:

a substrate having predefined regions for receiving the members of the array of materials;

an array of spatially addressable working electrodes coupled with the substrate at the predefined regions;

at least one other electrode, the at least one other electrode and the spatially addressable working electrodes adapted to apply an independently controllable electrical condition between each of the predefined regions and the at least one other electrode so that when the substrate contacts a source material provided in a solution containing ions, ions in said solution undergo chemical reaction at the predefined regions forming the array of materials in which at least two members of the array of materials are different; and

an apparatus for screening for a common selected property of the members of the array of materials while the members of the array of materials are on the substrate.

16 71. The apparatus of claim ¹⁵70 wherein said apparatus for screening includes a scanning device.

17 72. The apparatus of claim ¹⁵70 wherein said apparatus for screening is capable of screening for catalytic activity.

18 73. The apparatus of claim ¹⁵70, wherein said apparatus for screening is capable of electrochemical screening.

19 74. An apparatus for housing an array of materials prepared by electrochemical deposition, the array of materials having a plurality of members, the apparatus comprising:

a substrate having a plurality of predefined regions defining an array including more than nine different uncharacterized electrochemically deposited inorganic materials;

an array of spatially addressable electrodes discretely coupled with the substrate at each of the predefined regions; and

at least one other electrode, the at least one other electrode and the spatially addressable electrodes adapted to apply an independently controllable electrical condition between each of the predefined regions and the at least one other electrode so that when the substrate contacted a source material provided in a solution containing ions, ions in said solution undergo chemical reaction at the predefined

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